

US Army Medical Research and Materiel

Technology Available for Licensing



Features and advantages:

- Could potentially be used to prevent, treat, or inhibit injuries from chemical warfare agents
- Provided 100% reduction in blister severity in mice, when applied before or after exposure
- Reduced mouse ear weight loss, when applied before or after exposure
- Could potentially be applied

Patent Status

clothing or gear

Point of Contact

Antivesicant Compounds and Methods of Making and Using Thereof

This invention consists of antivesicant compounds comprising a backbone structure of 2-mercaptopyridine-N-oxide, and compositions and methods for treating, preventing, or inhibiting injuries induced by a vesicant agent.

Vesicants - chemical warfare agents that cause incapacitating blistering injuries at the site of exposure - include sulfur mustard, nitrogen mustard, Lewisite, and phosgene oxime. Sulfur mustard, or bis-2-chloroethylsulfide (HD), is a radiomimetic alkylating chemical with mutagenic, cytotoxic, and carcinogenic properties. Although research has been conducted on the biochemical injuries associated with HD, they are not fully understood and a need exists to identify effective treatments for them. To assess the antivesicant compounds, undiluted HD in methylene chloride was applied to the ears of anesthetized albino male mice. The compounds were screened as protectants or decontaminants by applying various concentrations of them either before or after, respectively, applying the HD to the ear. The untreated ear of the same mouse served as the control. Two of the compounds, 2-mercaptopyridine-N-oxide (MPNO) and 4-methyl-2-mercaptopyridine-N-oxide (4-Me-MPNO), provided a 100% reduction in the severity of sub-epidermal blisters when applied 10 minutes before or 15 minutes after application of HD. These compounds also provided a range of 71% reduction in mouse ear weight loss, and a

range of 30% - 68% in the reduction of severity of epidermal necrosis, for the same exposure times. A third compound, 6-Me-MPNO, was also effective but not to the same degree. **Patent No. 6,664,280** issued December 16, 2003. **Available from: www.uspto.gov** **Docket No.: WRAIR 01-11**

Ideally, the compounds could be applied as a protectant or decontaminant to clothing, combat gear, protective shelters, sponges, lotions, and the like to protect against or prevent injuries induced by vesicant agents.

E-mail: usamrmcorta@amedd.army.mil

Voice: 301-619-6664/2065/7219 Fax: 301-619-5034

KEYWORDS: antivesicant; 2-mercaptopyridine-N-oxide; 4-methyl-2-mercaptopyridine-N-oxide

Licensing Opportunities • Patent licenses are available to companies with commercial interests